Guide to Installation & Operations

Cabin Audio Amplifier
Model #: PA-7500A

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List of Illustrations

Section No.	Description	Page No.

Table of Contents

Section	Description	Page
1.0	**General Information**	5
1.1	Introduction	5
1.2	Purpose of the Equipment	5
1.3	Operational Features	5
1.4	Optional Equipment	5
2.0	**Installation**	6
2.1	Prior to Installation	6
2.2	Unpacking and Inspection	6
2.3	Cautions & Warnings	7
2.4	Wiring Requirements	7
2.5	Physical Requirements	8
2.6	Electrical Connections	8
2.7	Pinouts / Descriptions	8
2.8	Connector / Mating Connector Information	9
2.9	Post-Installation Test	9
3.0	**Operation**	9
3.1	Loading the Audio Source	9
3.2	Gain Control Adjustment.	9
4.0	**Troubleshooting Guide**	8
5.0	**Specification and Drawings**	10
5.1	Unit Specifications	10
5.2	Applicable Drawings	9

MODEL NO.
PA-7500A
Cabin Audio Amplifier

1.0 General Information

1.1 Introduction

This manual contains information for the installation and operation of the Audio International, Inc. (AI) Cabin Audio Amplifier, Model No. PA-7500A Information within this publication includes relative physical, mechanical, and electrical characteristics. Also included within this publication are additional references needed for installation and operation.

1.2 Purpose of the Equipment

The PA-7500A is an audio amplifier that takes low audio signal and magnifies it. The audio amplifier can be utilized to form standard, basic building blocks that can be arranged in almost any configuration for any size aircraft. The audio amplifier is built to rugged aircraft standards and is easily incorporated into new or existing cabin audio systems. It features compact size, solid state circuitry, lightweight aluminum housing, and an attractive, durable anodized finish.

1.3 Operational Features

The PA-7500A is a professional cabin audio amplifier that delivers high performance, excellent frequency response, and clear sound quality. This unit has a small footprint and generates little heat yet it can produce dual output, high-power, high fidelity sound.

The PA-7500A will produce stereo audio output for the entertainment system and monaural audio for page / chime. The amplifier is designed to interface with the RS-485 data bus allowing all entertainment switch panels to communicate with the audio amplifier

1.4 Optional Equipment

Audio International, Inc. carries a complete line of speaker systems to enhance any aircraft entertainment system. As an industry leader in aviation entertainment systems, Audio International, Inc. can offer the perfect combination for the quietest listening and the highest quality in personal audio entertainment.

2.0 Installation

2.1 Prior to Installation

The PA-7500A is a simple module to use and install. All audio input and output cables on the units should be twisted shielded pair (20 AWG minimum, 16 – 18 preferred) unless otherwise specified. The module must be attached to conform to the standards designated by the customer, installing agency, and existing conditions as to the unit location and type of installation. The following should be carefully considered before installing:

2.1.1 Select a mounting location for the unit. For best results, the unit must be located as close to source equipment as possible. Long low-level runs may introduce noise into the audio signal. Allow a minimum of ½ inch air space around the amplifier due to the amount of heat generated by the unit. Refer to section 5.0 for unit dimensions and mounting hole locations.

2.1.2 Select a mounting location where 28 VDC power and audio signal has been previously installed.

2.1.3 The purpose of the audio amplifier is to compensate for low level audio signals and "amplify" them to a high level. The amplifier will be most effective when the interior is thoroughly furnished and all pieces of furniture are in place

2.2 Unpacking and Inspection

2.2.1 Carefully open the packaging and remove the Amplifier. Inspect the unit for damage. Retain the packing materials and packing list. Verify that all components have been included in the package. The components should arrive in good condition. However, occasionally damage does occur in shipping.

If damage has occurred, a claim must be filed with AI within 24 hours after unpacking and a "Return Request Authorization Number" must be obtained from AI. Refer to the front cover of this manual for address and telephone number of the Audio International, Inc. authorized dealership. Repackage the unit in its original packaging materials and return it to AI following instructions given. If no return is necessary, retain the packing materials for storage or reshipment if necessary.

2.3 Cautions & Warnings

2.3.1 All audio connections to the PA-7500A should be shielded and properly grounded. Perform a pin-to-pin check to confirm that all wires terminate in their proper location. It is important to do a power and ground check on the pin connections. Ensure that power and ground are applied only where required.

2.3.2 **DO NOT** connect or disconnect the PA-7500A while power is applied.

2.3.3 **DO NOT** connect or disconnect any speaker when power is applied to the amplifier.

2.3.4 **DO NOT** remove any factory-installed screws. Damage to the unit may result and void any warranties.

2.4 Wiring Requirements

2.4.1 The installing agency must supply and fabricate all external cables. The length and routing of external cables must be carefully studied and planned before attempting installation of the equipment. Allow adequate space for installation of cable and connectors. Avoid sharp bends and placing cables near aircraft control cables. Maintain a minimum clearance of three (3) inches from any control cable. If wiring is run parallel to combustible fluid or oxygen lines, maintain a separation of six (6) inches between the lines.

2.4.2 All power and ground wires must be 18 AWG minimum. All input and output lines require twisted, shielded cable with the cable shields grounded. Power ground wires must be grounded within twelve (12) inches of the unit. All wires must be in accordance with MIL-W-22759 or equivalent. Twisted, shielded cable must be in accordance with MIL-W-27500 or equivalent. Protect power wires with circuit breakers or fuses located close to the electrical power source bus.

2.4.3 The PA-7500A is designed to interface with other AI equipment via the RS-485 data bus. This is a bi-directional data bus that allows multiple units to be connected simultaneously. The lines are daisy-chained between units with 120-ohm resistors installed at both ends of the wiring harness. Cable designed specifically for data bus use with 120-ohm nominal impedance should be utilized. Contact AI for recommended cables.

2.5 Physical Requirements

2.5.1 Refer to Section 5.1 for unit dimensions.

2.6 Electrical Requirements

2.6.1 The PA-7500A utilizes two connectors. P1 and P2. P1 is a 25 pin connector. The signals interfaced through P1 are left / right speaker, 28 VDC emergency power and woofer outputs. Power requirement is 28 VDC at continuous power output @ 12 amps (15 amp breaker-4 channel).

2.6.2 P2 is a 37 pin connector. The signals interfaced through P2 are PA / chime, briefer, stereo left and right (high and low), RS-485 data bus, and 28 VDC power. When the briefer key input is activated, all entertainment audio will be muted. The PA key input has the highest priority and it will override all briefer and entertainment audio inputs. When the PA source is keyed, all other audio will be muted. Chime inputs will operate simultaneously with the briefer.

2.7 Pinouts / Descriptions

The PA-7500A unit connectors and descriptions are as follows:

Pin #	Description	Pin #	Description
P1			
1	Left Speaker 1 - High	14	Woofer 1 – High
2	Left Speaker 2 – High	15	Emergency Bus 28 VDC In
3	Left Speaker 1 – Low	16	28 VDC
4	Left Speaker 2 – Low	17	28 VDC
5	Woofer 1 – Low	18	Ground
6	28 VDC	19	Ground
7	28 VDC	20	Ground
8	28 VDC	21	Ground
9	Woofer 2 – Low	22	Chassis Ground
10	Right Speaker 1 – Low	23	Ground
11	Right Speaker 2 – Low	24	Ground
12	Right Speaker 1 – High	25	Woofer 2 – High
13	Right Speaker 2 – High		

Pin #	Description	Pin #	Description
P2			
1	No Connection	20	PA MIC -
2	PA MIC +	21	No Connection
3	Wgt-On-Wheels Input (Ground)	22	Briefer -
4	Briefer +	23	No Connection
5	No Connection	24	PA MIC Key
6	Left In +	25	Briefer Key
7	Left In -	26	+ PA Output
8	Right In +	27	- PA Output
9	Right In -	28	PA Key Out
10	Data Bus Shield	29*	SER Data +
11	+ 28 VDC (Adj)	30*	SER Data -
12*	Ground (Adj)	31	Chime In (+28 VDC)
13*	SER + (Adj)	32	TT Chime In (+28 VDC)
14*	SER – (Adj)	33	Call In (Grnd)
15	No Connection	34	Hook In (Grnd)
16	No Connection	35	PA Sidetone +
17	No Connection	36	High Tone
18	No Connection	37	Low Tone
19	No Connection		

*Serial Data Bus

2.8 Connector / Mating Connector Information

Mating connector part numbers are as follows:

Pin #	Connector	Mating Connector
P1	SD25M10HVL0	SD25F10HVL0
P2	SD37M10HVL0	SD37F10HVL0

2.9 Post Installation Test

2.9.1 With the aircraft power ON, test the cabin audio amplifier. Any unit connected to the RS-485 data bus may be used to test proper operation of the unit.

2.9.2 While an entertainment audio unit is sending audio signals through the amplifier, key and speak into a microphone to ensure that the page / chime overrides the entertainment audio. Ensure all microphones are tested. Verify that the briefer audio can be heard through the speakers.

2.9.3 Remove power from the amplifier and verify that the 28 VDC emergency power is supplied to the amplifier. Verify that the subwoofers are disabled while emergency power is applied. Ensure that PA audio can be heard in the speaker system from all respective microphones.

3.0 Operations

3.1 To operate the PA-7500A, load an audio source with selected material. Verify that all of the audio inputs are available to the system and that selected audio sources can be heard through the speaker system. All audio sources that interface with this amplifier unit must be checked for proper operation. Use the switch panel controls to verify that audio entertainment units are operating in a proper manner.

3.2 Key and speak into a microphone and verify that the page / chime and briefer overrides the entertainment audio. When a microphone key is activated, all other audio source signals are overridden and PA audio should be present in the speaker system.

4.0 Troubleshooting Guide

Problem	Possible Cause	Solution
No sound	PA-7500A is improperly installed.	Verify 28 VDC power and audio input is present Contact AI for assistance

5.0 Specifications and Drawings

5.1 Amplifier Unit Specifications

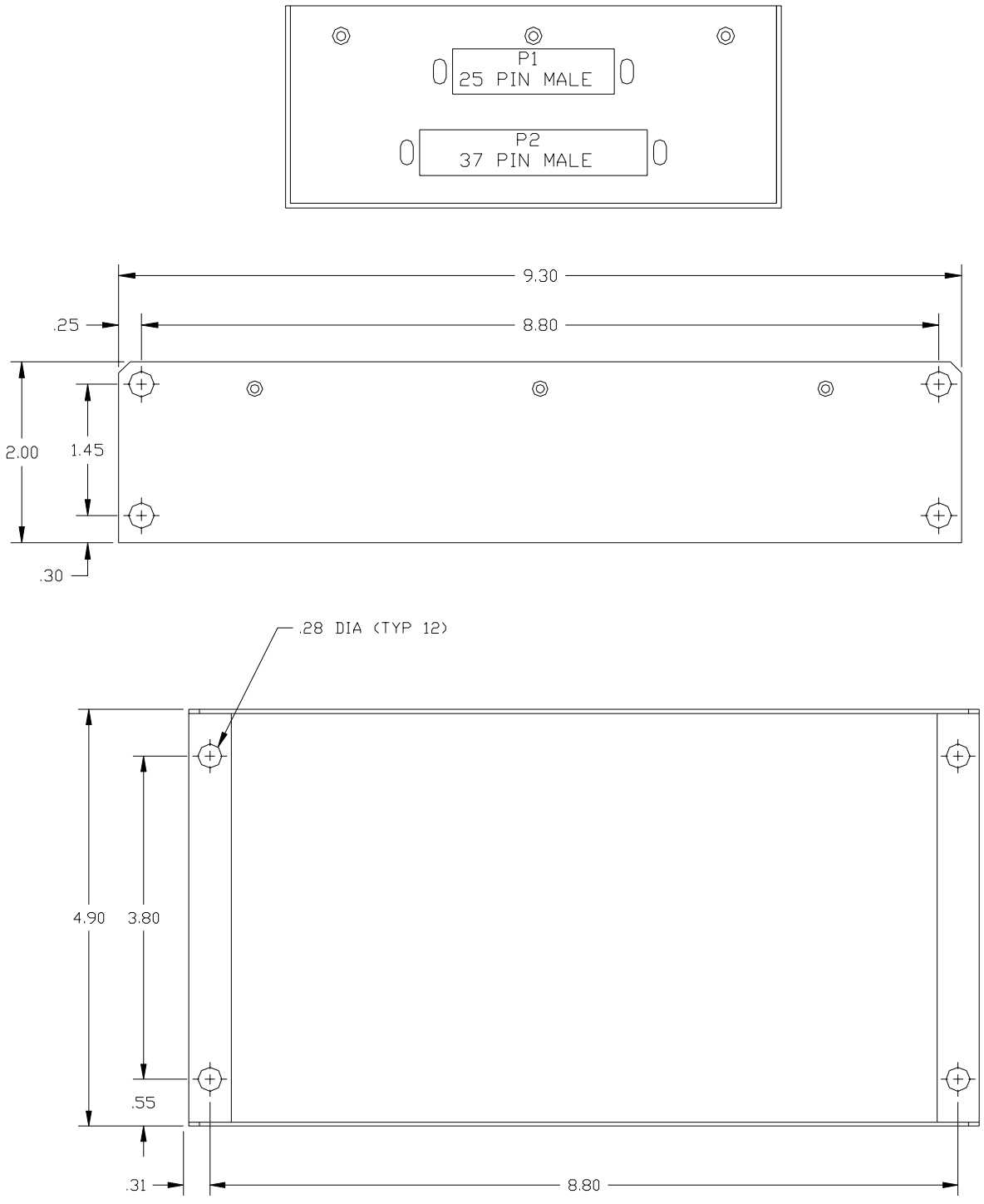
Physical Specifications	
Housing	Lightweight Aluminum
Dimensions	Length-8.8”, width-4.9”, height-2.0”
Weight	3.2 lbs.

Electrical Specifications	
Power	28 VDC @ continuous power output (2 channel)
Emergency Power	28 VDC Page / Chime
Data Bus Type	RS-485

Audio Specifications	
Electric Crossover	Low Range: 135 Hz
	High Range: 135 Hz
Channel Output Power	4-Channel 100 Watts Peak Output Maximum per Channel
Minimum Load Impedance	4 Ω per Channel
Input Impedance	10K Briefer, 1VRMS (nominal)

5.2 Applicable Drawings

5.2.1 The following diagram shows the unit dimensions and mounting hole locations on the PA-7500A audio amplifier.



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